

sented. I am now watching to see if they will take hold and grow this spring (1931).

Near the above station of cliff brake were fine specimens of *Phegopteris Dryopteris* (oak fern), *Cystopteris bulbifera*, *Adiantum* and other ferns growing on wet rocks near a waterfall.

A great part of the enjoyment to be derived from a fern garden is to be found in discovering for one's self the fern stations and observing the locality and conditions under which the ferns grow. A fern brought home after an all day tramp through woods or a climb over rocks and ledges is more highly prized than one obtained by other means and is more likely to grow than one sent from an unfamiliar habitat.

WEST ORANGE, NEW JERSEY.

Recent Fern Notes from Southern California

JOSEPH EWAN

During the past three years college friends and myself have collected ferns rather extensively in the southern half of the state, and the following notes are the result of these recent trips afield.

To these personal notes are added those of Dr. P. A. Munz, of Pomona College, Claremont, California, hitherto unpublished. I express my sincere appreciation to Dr. Munz for many kindnesses and suggestions extended.

Our most complete report on the fern flora of this region is "Southern California Pteridophytes" by P. A. Munz and Ivan M. Johnston (*AM. FERN JOUR.* **12**: 69-77, 101-122 and **13**: 1-7, 1923). This report, and more recent scattered articles are used as the reference basis for this short paper.

All specimens cited are in the private herbarium of the author except as indicated, "Pomona College Herbarium."

ADIANTUM CAPILLUS-VENERIS L. Forms designated by Moxley as forma *cristatum*, "the tips of the fronds more or less dichotomously forking and crested," have been collected at a small canyon off Fish Canyon, of the San Gabriel Range (*Ewan, 1275*), and at Palm Canyon, Western Colorado Desert (*E. L. Peterson, Feb. 22, 1930*).

ADIANTUM PEDATUM L. var. ALEUTICUM Rupr. Collected at a hitherto unpublished station in the San Bernardino Mountains—Falls Creek, off Mill Creek, at 7200 ft. (*E. L. Peterson, June 29, 1929, and Aug. 31, 1929*). The Little Santa Anita Canyon station, San Gabriel Mts., pointed out to me by its discoverer, G. L. Moxley, was flourishing in 1928 (*Ewan, 129*), but one year later the colony had been nearly wiped out and produced freak forms (*Ewan, 1282*). This station near Orchard Camp is intermediate between the Upper Sonoran and Transition Life Zones with *Woodwardia chamissoi*, *Pseudotsuga macrocarpa*, *Quercus chrysolepis*, *Umbellularia californica*, *Boykinia rotundifolia*, *Acer macrophyllum* (starred by Hall in "Life-Zone Indicators in California," *Proc. Calif. Acad. Sci., Vol. 9, no. 2, p. 58*, as being "particularly characteristic" of the Transition Zone), and *Aralia californica* as representative plants.

ATHYRIUM FILIX-FEMINA (L.) Roth var. CALIFORNICUM Butters. Known from the Transition Zone in our mountains, but recently collected in the Canadian Zone of the San Jacinto Mts. on North Fork, Tahquitz Creek, at 8200 ft. (*Ewan, 2126*).

CHEILANTHES GRACILLIMA Eaton. Authors generally seem to have overlooked the range extension for this

species given by F. J. Smiley in "Report upon the Boreal Flora of the Sierra Nevada of California" (Univ. Calif. Publ. Bot., Vol. 9, p. 73). The Tulare County record of Dudley there cited may be strengthened by its discovery in "exposed dry rock crevices" of Moro Rock, Sequoia National Park, Tulare Co., at 6719 ft. (*Harvey Anderson*, July 21, 1929).

CRYPTOGRAMMA ACROSTICHOIDES R. Br. The southernmost station in North America for this fern, summit of San Jacinto Peak, 10,805 ft., Riverside Co., was discovered and reported by Munz (AM. FERN JOUR. **12**: 115). I re-collected the fern at this station Sept. 1, 1930 (*Ewan*, 2165).

CYSTOPTERIS FRAGILIS (L.) Bernh. Collected in Little Santa Anita Canyon, San Gabriel Mts., at 3000 ft. (Davidson & Moxley, Fl. So. Calif., p. 16, 1923) in 1928 (*Ewan*, 18), in the immediate vicinity of the *Adiantum pedatum aleuticum* station above described, but now extinct. This fern has an altitudinal range in Southern California of 8000 ft.; for contrasted with the last station is "rare about rocks, north side of San Gorgonio Peak at 11,100 ft." (*Munz*, 6207) in Pomona College Herb. Also collected on summit of San Jacinto Peak, 10,805 ft., by Dr. Munz in the past and by myself in 1930 (*Ewan*, 2157). An interesting collection was made of this fern near Keyes Ranch, 4500 ft., Little San Bernardino Mts., by F. R. Fosberg, May 1, 1930 (in Pomona College Herb.). This station emphasizes the great altitudinal range of this fern. Notes kindly furnished by Mr. Fosberg.

NOTHOLAENA CALIFORNICA Eaton. To the published lists of known stations for the coastal slope of Southern California may be added: "rock crevices between Fish and San Gabriel Canyons," Los Angeles Co. (*Moxley*,

1126), May 30, 1923. Mr. Moxley kindly granted me permission to publish this record.

POLYPODIUM HESPERIUM Maxon. An unreported station for this fern is Bluff Lake, 7500 ft., San Bernardino Mts., where it grows in "north facing crevices" and was first collected by *Munz* (8162), June 1, 1924, and subsequently by *Johnston* at a slightly higher elevation, 7650 ft., July 5, 1924. Another station of this region is "two miles east of Bluff Lake at 7400 ft." (*Munz*, 10668). Unreported stations for the San Jacinto Mts. are "Long Valley, 8500 ft." *Jaeger*, June 28, 1923, and Dark Canyon, 7200 ft. (*Munz & Johnston*, 8778) where it favored the "north side of rocks." All specimens of *P. hesperium* cited are in the Pomona College Herb.

THELYPTERIS AUGESCENS (Link) M. & J. An unreported station of the San Gabriel Range is Van Tassel Canyon, west of Fish Canyon (*Ewan*, 1278), where a freak fertile frond was also collected (*Ewan*, 1277).

LOS ANGELES, CALIFORNIA.

Recent Fern Literature

Graustein, Miss Jeanette E., "Evidences of Hybridism in *Selaginella*," *Bot'l Gazette*, Vol. 90, September, 1930.

Miss Graustein has examined eight species of *Selaginella* including the two common hardy forms, *S. apoda* and *S. rupestris*. She has subjected fruiting material of these forms to cytological study and has found numerous aberrations from normal behavior. In general, such divergences in the process of spore formation and so forth are found to be characteristic of hybrids. In this connection, she reaches the conclusion that hybridism has played a considerable part in the evolution